

A NEW SPECIES OF *PSEUDODIPSAS* C. & R. FELDER (LEPIDOPTERA:
LYCAENIDAE) FROM NORTHERN NEW SOUTH WALES

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Abstract

Pseudodipsas arcana sp.n. is described, figured, and compared with related *Pseudodipsas* species. A key to Australian species of *Pseudodipsas* is given.

Pseudodipsas arcana sp. n.

(Figs 1, 2, 5, 6, 9, 11, 13, 15, 17)

Types:— NEW SOUTH WALES: *Holotype* ♂, 24 km W. Grafton, 23.ix.1976, C. G. Miller, genitalia tube 198, Reg. No. 3286, in Australian National Insect Collection. *Paratypes*: 20♂, 7♀, 1♀ same data as holotype, in Australian National Insect Collection; 14♂, 4♀, labelled similarly but dated 15.ix.1974, 16.iii.1975, 5.iv.1975, 11.x.1975, 5.iii.1976, 9.iii.1975, 23.iii.1975, 23.ix.1976, 10.x.1976, 19.xii.1976, 9.i.1977, 25.iii.1977, 2.iv.1977, 10.iii.1978, 11.iii.1978, in C. G. Miller collection; 2♂, 24 km W. Grafton, 13.x.1974, I. G. Morhaus, in I. G. Morhaus collection; 1♂, 2♀, 25 km W. Grafton, J. F. R. Kerr, dated 3.i.1976 and 26.i.1976 in J. F. R. Kerr collection; 1♂, 24 km W. Grafton, 24.xi.1977, R. Field, in R. Field collection; 2♂, 24 km W. Grafton, 25.i.1976, 27.i.1976, J. d'Apice in J. d'Apice collection.

Distribution:— The species has been found only on a single hill-top about 24 km west of Grafton, New South Wales.

Description:— *Male* (Figs 1, 5). Head dark grey with some white scales; frons white with two vertical bars of dark grey; antennae black ringed with white, club black, unscaled tip orange; labial palpi black above with some white scales, beneath terminal segment black, second segment black towards tip, white towards base. Thorax: above black, clothed in long dark grey hair-scales; beneath white, clothed in long white hair-scales; legs clothed in long white hair-scales. Abdomen above dark grey, beneath pale grey. Fore wing above: bronze-brown, grey-brown towards base; a triangular area extending from dorsum to discal cell with slight copper tinge; veins in median area lined with black scales; fine terminal line dark brown; cilia brown with white tips except near tornus where dark brown. Hind wing above: bronze-brown, grey-brown towards base; costal and inner margins brown, veins lightly coated with black scales; a black spot at termen between CuA_1 and CuA_2 ; another black spot, smaller and split by orange scales, between CuA_2 and $1A + 2A$; a few blue scales between black spots and termen; fine terminal line dark brown; cilia dark brown with white tips except at end of CuA_2 and $1A + 2A$ where cilia longer, tuft-like and without white tips; long hair-scales at base and along inner margin brown. Fore wing beneath: grey-brown; bands darker grey-brown prominently margined with white; small subbasal band in cell; submedian band from radial vein to $1A + 2A$ broken at CuA_2 ; median band at end of cell from M_1 to M_3 ; postmedian band from costa to $1A + 2A$ with sections displaced at M_3 and CuA_2 ; subterminal band from costa to $1A + 2A$ fainter; fine terminal line dark brown; cilia brown. Hind wing beneath: grey-brown; bands darker grey-brown, prominently margined with white; subbasal band of three spots from $Sc + R_1$ to CuA_1 ; submedian band from $Sc + R_1$ to $1A + 2A$ broken; median band at end of cell between M_1 and M_3 ; postmedian band from $Sc + R_1$ to inner margin with sections displaced at every vein except M_2 ; subterminal band fainter, crenulate from $Sc + R_1$ to

inner margin; large black spot near termen between CuA_1 and CuA_2 and another divided by orange scales along $1A + 2A$, black spots with proximal line of orange scales and distal line of pale blue or white scales; fine terminal line dark brown; cilia brown, with white tips towards tornus except at end of CuA_2 and $1A + 2A$ where cilia dark brown longer and tuft-like. Length of fore wing 10.5 mm to 12.5 mm.

There is little variation on the uppersides of both sexes, but the undersides, particularly in the males, vary in the widths of the dark bands and the degree of prominence of the white margins of the bands.

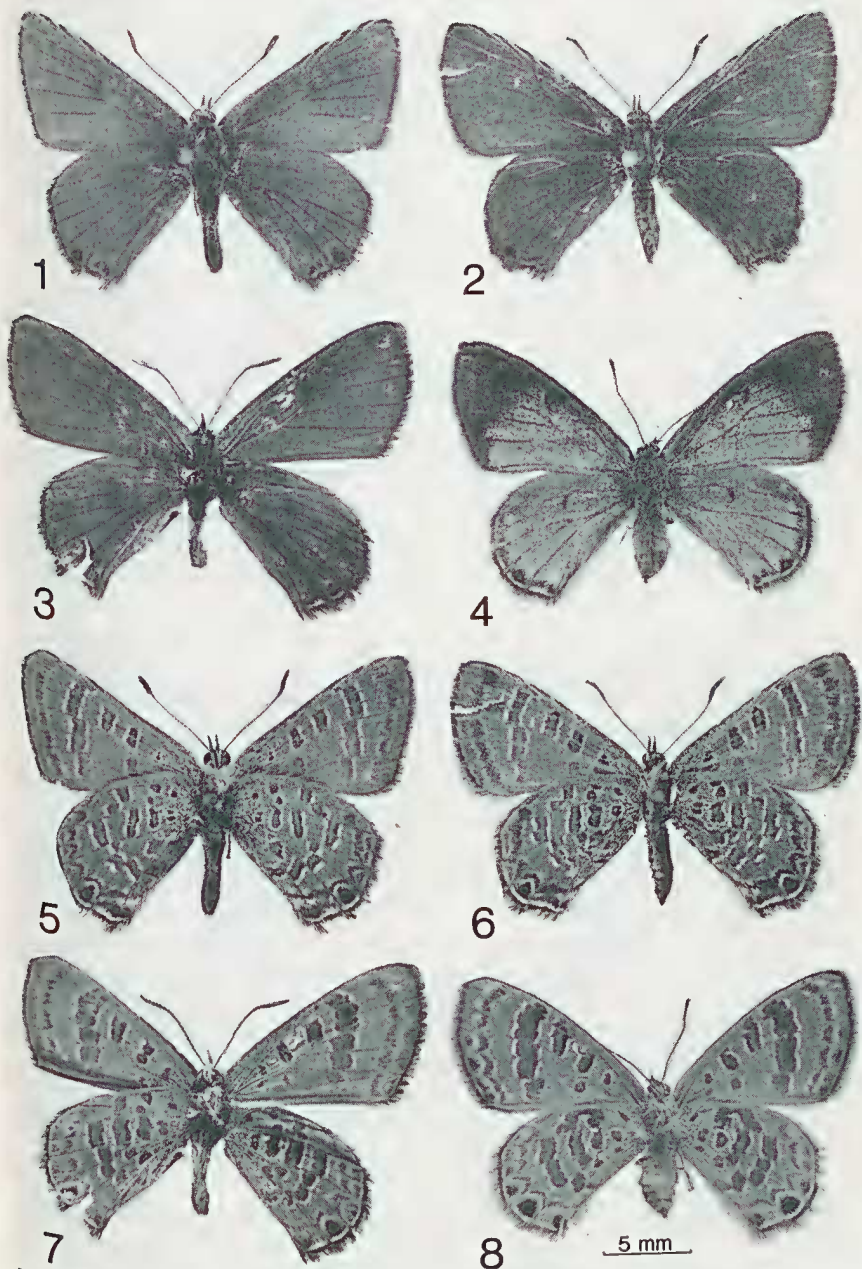
Male genitalia (Figs 9, 11, 13, 15). Uncus produced into two processes (A) well separated at base; uncus spreading; tip of valva short, robust and hook-like; ring formed by vinculum oval in anterior view; aedeagus gradually curved with pointed tip.

Female (Figs 2, 6). Head, thorax and abdomen as in male. Fore wing above: bronze-brown, grey-brown towards base; termen more rounded and more broadly black than in male; cilia as in male. Hind wing above: slightly darker bronze-brown than fore wing grey-brown towards base; tornal spots as in male but with a few more blue scales distally and a few blue scales proximally; cilia as in male. Fore wing beneath: as in male but slightly darker; terminal line broader and with faint pale line proximal to it. Hind wing beneath: as in male but differs in the same way as the fore wing. Length of fore wing 12 mm to 13 mm.

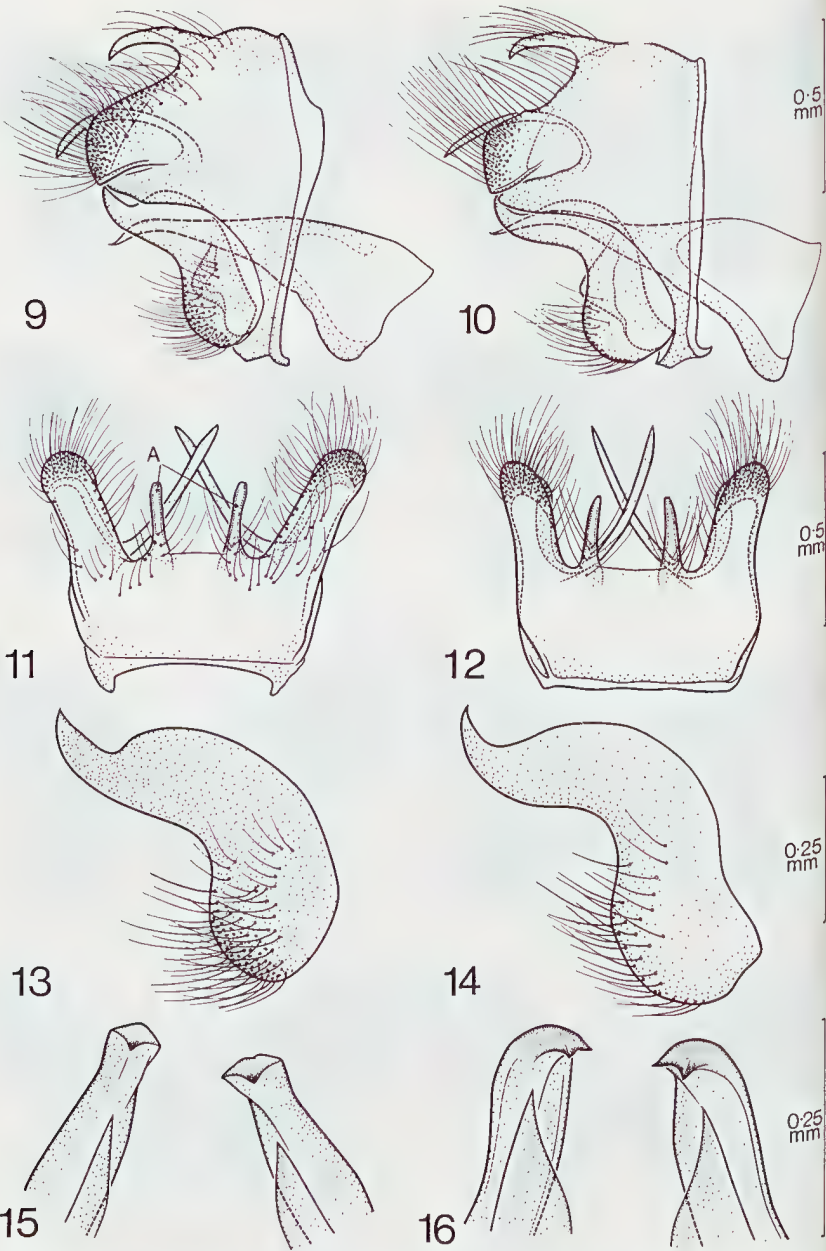
Female genitalia. Because the females of this group are rare in collections the female genitalia have not been examined.

Discussion

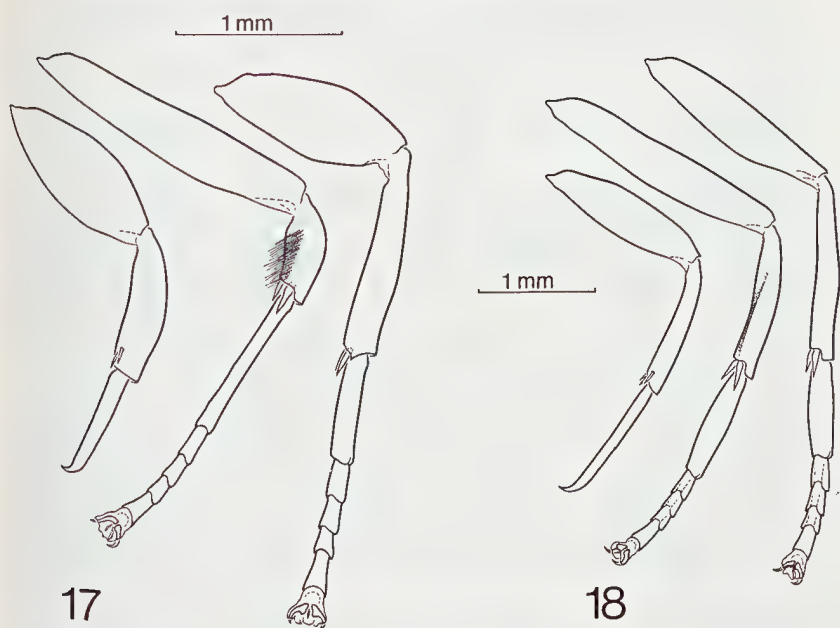
P. illidgei Waterhouse and Lyell, *P. arcana*, and an undescribed species from Cape York Peninsula, may be immediately distinguished from other species of *Pseudodipsas* by their legs. Both sexes in the *P. illidgei* group have the fore and hind femora swollen and the mid tibia is shorter than the first tarsal segment of the mid leg (Figs 17, 18). In males of *P. arcana* the apex of the fore wing is more pointed, the termen straighter, and the termen of the hind wing is more angled at R_s and more bowed inwards between CuA_2 and $1A + 2A$ than in *P. illidgei*. The uppersides of females of *P. arcana* lack blue areas, except for a few scales around the tornal spots, and so differ markedly from females of *P. illidgei*, *P. myrmecophila* Waterhouse and Lyell, and *P. brisbanensis* Miskin. In both sexes of *P. illidgei* the dark bands beneath are broader, darker and show less displacement at the veins, than do those of *P. arcana* (Figs 1-8). The male genitalia of the two are similar but the uncus of *P. arcana* spreads more widely in dorsal view than that of *P. illidgei* (Figs 9-12). Differences may also be found in the relative proportions of the tegumen and in the tip of the valva, but because of the scarcity of material few dissections have been done and the significance of these differences remains to be determined. The nomenclature used for the male genitalia mostly follows Elliott (1973). An undescribed species, from Cape York Peninsula is smaller (male fore wing length 9 mm and 10 mm), the termen of the fore wing is straighter and the apex more pointed than in *P. arcana*. It has the processes of the uncus more widely separated than *P. arcana* and the ring formed by the vinculum is almost circular in anterior view. As only two males are known its description should await the collection of further males and the unknown female.



Figs 1-8. Upper and underside: (1, 5) holotype ♂ *P. arcana* sp.n.; (2, 6) paratype ♀ *P. arcana*; (3, 7) ♂ *P. illidgei* Waterhouse and Lyell, Burleigh Heads, Q.; (4, 8), ♀ *P. illidgei*, Goat Is., Brisbane R., Q.



Figs 9-16. Male genitalia. Odd numbers, holotype ♂ *P. arcana* sp. n.; even numbers, *P. illidgei* Waterhouse and Lyell: (9, 10) lateral view; (11, 12) dorsal view; (13, 14) valva in lateral view; (15, 16) tip of valva in dorsal view.



Figs 17-18. Fore, mid and hind legs: (17) *P. arcana* sp. n.; (18) *P. cuprea* Sands. All are left legs viewed from the outside.

In addition to the shape of the legs, *P. arcana* may be distinguished from *P. cuprea* Sands by the shape of the termen of both wings; this is a useful character in distinguishing all species of *Pseudodipsas* but difficult to describe. The upperside of males can be similar in colour to *P. cuprea* from southern Queensland but the copper areas are smaller and less conspicuous than in *P. cuprea* from Newcastle and further south. However, *P. arcana* has a narrower fore wing than *P. cuprea* and the markings beneath are broader and have broader white borders. The shape of the termen of the fore wing is more rounded than in *P. cuprea* from eastern Victoria, Sydney and localities north of Sydney, but less rounded than *P. cuprea* from the Central and Southern Tablelands of New South Wales. The status of these tableland populations of *P. cuprea* needs further investigation.

Set specimens of *P. arcana* tend to develop greasy marks as do related species.

P. arcana males have a strong tendency to hill-top and have been taken flying in company with males of *P. cuprea*, *P. b. brisbanensis* and *P. myrmecophila*. Nothing is known of the early stages. Adults have been taken in all months from September to April.

Key to the described Australian species of *Pseudodipsas* C. & R. Felder

1. Fore wing with veins R_5 and M_1 separated at base; beneath, ground colour white to pale brown 2
 Fore wing with R_5 and M_1 shortly stalked; beneath, ground colour brown to grey-brown 3
2. Above, both sexes with an area of shining blue *cephenes* Hewitson
 Above, both sexes without shining blue *eone* C. & R. Felder
3. Fore and hind femora swollen; mid tibia shorter than first tarsal segment of mid leg (Fig. 17) 4
 Fore and hind femora not swollen; mid tibia longer than first tarsal segment of mid leg (Fig. 18) 5
4. Beneath, hind wing with postmedian band between CuA_1 and CuA_2 displaced basally by full width of band; female without shining blue above *arcana* sp. n.
 Beneath, hind wing with postmedian band between CuA_1 and CuA_2 only slightly displaced; female with large areas of shining blue above *illidgei* Waterhouse & Lyell
5. Size small, fore wing length of male 9-10 mm, female 11-12 mm *myrmecophila* Waterhouse & Lyell
 Larger, fore wing length of male 12-14 mm (rarely 11 mm), female 14-16 mm 6
6. Beneath, fore wing with postmedian band curved between R_5 and M_3 and conspicuously broken and displaced at M_3 *brisbanensis* Miskin
 Beneath, fore wing with postmedian band straight between R_5 and M_3 and slightly displaced at M_3 *cuprea* Sands

Acknowledgements

We are grateful to Dr C. N. Smithers, Mr G. Daniels (both of the Australian Museum), Mr J. d'Apice, Mr R. Field, Prof. J. F. R. Kerr, Mr J. Macqueen, Mr M. S. Moulds and Mr I. G. Morhaus for lending specimens. We are also grateful to Mr S. P. Kim for the drawings, Mr J. Green for the photographs and Barbara Ranieri for typing the manuscript. Special thanks are due to Mr D. P. Sands whose work on this group has greatly aided the discrimination of new species.

Reference

- Eliot, J. N., 1973. The higher classification of the Lycaenidae (Lepidoptera): a tentative arrangement. *Bull. Br. Mus. nat. Hist. (Ent.)* 28: 371-505.